WHAT IS CLAIMED IS:

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1. A data processing device comprising:

a plurality of data processing units;

a first memory shared for storing data, to which first memory each of said data processing units

10 makes an access so as to perform an operation;

a transfer completion time designation unit for designating a transfer completion time according to need, within which transfer completion time, transferring the data in response to the accesses made

15 by said data processing units should be completed;

an expected transfer completion time calculation unit for calculating an expected transfer completion time needed for completing the data transfer in response to the accesses made by said data processing

20 units, said expected transfer completion time calculation unit calculating the expected transfer completion time by taking current access status of said first memory into consideration; and

an access management unit for managing the

25 access to said first memory based on the transfer

completion time and the expected transfer completion
time.

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    2. The device as claimed in claim 1, said
device further comprising:
    a second memory for storing the data stored in
10 said first memory, said second memory having a transfer
rate lower than a transfer rate of said first memory;
wherein,
    when the data transfer is executed between
said first memory and said second memory, said expected
15 transfer completion time calculation unit calculates the
expected transfer completion time by taking the data
transfer rates of said first memory and said second
memory into consideration.

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    3. The device as claimed in claim 1, wherein:
    when one of the data processing units makes an
25 additional access to said first memory, said access

management unit prevents or postpones the additional access to said first memory when the expected transfer completion time exceeds the transfer completion time.

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4. The device as claimed in claim 1, wherein:

said data processing device is an image-

10 forming device provided with one data processing unit as an image input unit for inputting image data to said first memory and one data processing unit as an image output unit for outputting the image data stored in said first memory.

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5. A data processing device comprising:

20   a plurality of data processing means;

first memory means shared for storing data, to which first memory means each of said data processing means makes an access so as to perform an operation;

transfer completion time designation means for

25 designating a transfer completion time according to need,

within which transfer completion time, transferring the
data in response to the accesses made by said data
processing means should be completed;

expected transfer completion time calculation
5   means for calculating an expected transfer completion
time needed for completing the data transfer in response
to the accesses made by said data processing means, said
expected transfer completion time calculation means
calculating the expected transfer completion time by
10 taking current access status of said first memory means
into consideration; and

access management means for managing the
access to said first memory means based on the transfer
completion time and the expected transfer completion
15 time.

20   6. The device as claimed in claim 5, said
device further comprising:

second memory means for storing the data
stored in said first memory means, said second memory
means having a transfer rate lower than a transfer rate
25 of said first memory means; wherein,

when the data transfer is executed between
said first memory means and said second memory means,
said expected transfer completion time calculation means
calculates the expected transfer completion time by
5   taking the data transfer rates of said first memory
means and said second memory means into consideration.

10

7. The device as claimed in claim 5, wherein:
when one of the data processing means makes an
additional access to said first memory means, said
access management means prevents or postpones the
15 additional access to said first memory means when the
expected transfer completion time exceeds the transfer
completion time.

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8. The device as claimed in claim 5, wherein:
said data processing device is an image-
forming device provided with one data processing means
25 as an image input means for inputting image data to said

first memory means and one data processing means as an image output means for outputting the image data stored in said first memory means.

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9. A program for executing on a computer to perform the functions of:

10   a plurality of data processing units;

a first memory shared for storing data, to which first memory each of the data processing units makes an access so as to perform an operation;

a transfer completion time designation unit

15 for designating a transfer completion time according to need, within which transfer completion time, transferring the data in response to the accesses made by said data processing units should be completed;

an expected transfer completion time

20 calculation unit for calculating an expected transfer completion time needed for completing the data transfer in response to the accesses made by said data processing units, said expected transfer completion time calculation unit calculating the expected transfer

25 completion time by taking current access status of said

first memory into consideration; and

an access management unit for managing the
access to said first memory based on the transfer
completion time and the expected transfer completion
5   time.

10   10. A computer-readable recording medium
storing a program for executing on a computer to perform
the functions of:

a plurality of data processing units;

a first memory shared for storing data, to
15   which first memory each of the data processing units
makes an access so as to perform an operation;

a transfer completion time designation unit
for designating a transfer completion time according to
need, within which transfer completion time,
20   transferring the data in response to the accesses made
by said data processing units should be completed;

an expected transfer completion time
calculation unit for calculating an expected transfer
completion time needed for completing the data transfer
25   in response to the accesses made by said data processing

units, said expected transfer completion time calculation unit calculating the expected transfer completion time by taking current access status of said first memory into consideration; and

5   an access management unit for managing the access to said first memory based on the transfer completion time and the expected transfer completion time.

10

11. An image-forming device comprising:

an image input unit;

15   an image output unit;

a storage unit for storing an image signal provided from said image input unit in a primary storage part, and storing the image signal stored in the primary storage part in a secondary storage part;

20   a delivering unit for delivering the image signal stored in the primary storage part, which image signal is read out from the secondary storage part, to said image output unit; and

a priority designation unit for designating

25 priority for each of a plurality of image signal

input/output operation requests.

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12. The image-forming device as claimed in claim 11, said device further comprising:

a request acceptance unit for accepting the image signal input/output operation requests;

10   a processing order control unit for determining a processing order of the image signal input/output operation requests based on respective priorities designated by said priority designation unit; and

15   an interruption/resumption control unit for interrupting a current image signal input/output operation request when the priority of the current image signal input/output operation request is lower than a highest priority of an image signal input/output

20 operation request among the image signal input/output operation requests, and for resuming the current image signal input/output operation request after completion of the image signal input/output operation request with the highest priority.

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13. The image-forming device as claimed in claim 12, said device further comprising:

a selection unit for selectively executing the control of said processing order control unit and said

5 interruption/resumption control unit.

10 14. An image-forming device comprising:

image input means;

image output means;

storage means for storing an image signal provided from said image input means in a primary

15 storage part, and storing the image signal stored in the primary storage part in a secondary storage part;

delivering means for delivering the image signal stored in the primary storage part, which image signal is read out from the secondary storage part, to

20 said image output means; and

priority designation means for designating priority for each of a plurality of image signal input/output operation requests.

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15. The image-forming device as claimed in claim 14, said device further comprising:

request acceptance means for accepting the image signal input/output operation requests;

5 processing order control means for determining a processing order of the image signal input/output operation requests based on respective priorities designated by said priority designation means; and

interruption/resumption control means for
10 interrupting a current image signal input/output operation request when the priority of the current image signal input/output operation request is lower than a highest priority of an image signal input/output operation request among the image signal input/output
15 operation requests, and for resuming the current image signal input/output operation request after completion of the image signal input/output operation request with the highest priority.

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16. The image-forming device as claimed in claim 15, said device further comprising:

25 selection means for selectively executing the

control of said processing order control means and said
interruption/resumption control means.

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17. A data processing device comprising:

a plurality of data processing units;

a first memory shared for storing data, to

10 which first memory each of said data processing units

makes an access so as to perform an operation;

a transfer completion time designation unit

for designating a transfer completion time according to

need, within which transfer completion time,

15 transferring the data in response to the accesses made

by said data processing units should be completed;

an expected transfer completion time

calculation unit for calculating an expected transfer

completion time needed for completing the data transfer

20 in response to the accesses made by said data processing

units, said expected transfer completion time

calculation unit calculating the expected transfer

completion time by taking current access status of said

first memory into consideration;

25 an access management unit for managing the

access to said first memory based on the transfer
completion time and the expected transfer completion
time; and

a priority designation unit for designating

5 priority for each of the accesses made by said data
processing units.

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18. A data processing device comprising:

a plurality of data processing means;

first memory means shared for storing data, to
which first memory each of said data processing means

15 makes an access so as to perform an operation;

transfer completion time designation means for
designating a transfer completion time according to need,
within which transfer completion time, transferring the
data in response to the accesses made by said data

20 processing means should be completed;

expected transfer completion time calculation
means for calculating an expected transfer completion
time needed for completing the data transfer in response
to the accesses made by said data processing means, said

25 expected transfer completion time calculation means

calculating the expected transfer completion time by taking current access status of said first memory means into consideration;

access management means for managing the
5   access to said first memory means based on the transfer completion time and the expected transfer completion time; and

priority designation means for designating priority for each of the accesses made by said data
10 processing means.

15   19. A data processing device comprising:
a unit for receiving a plurality of data transfer process requests;

a unit for calculating a required process time necessary for executing all data transfer processes
20 corresponding to the data transfer process requests in a time-sharing process manner, when at least one data transfer process has a time constraint; and

a unit for executing in the time-sharing process manner all data transfer processes except for
25 data transfer processes that should be excluded from

those data transfer processes to be executed for the
purpose of satisfying the time constraint, when the
calculated required process time exceeds the time
constraint for the relevant at least one data transfer

5   process.

10   20. The data processing device as claimed in
claim 19, wherein:

            said unit for executing in the time-sharing
process manner all data transfer processes except for
data transfer processes that should be excluded from

15   those data transfer processes to be executed for the
purpose of satisfying the time constraint selects the
data transfer processes to be excluded from those data
transfer processes to be executed for the purpose of
satisfying the time constraint based on predetermined

20   priority information provided to respective data
transfer processes.

25

21. The data processing device as claimed in claim 20, wherein:

the data transfer processes that should be excluded comprise those data transfer processes having a

5   lower priority in said predetermined priority information.

10   22. A data processing device comprising:

means for receiving a plurality of data transfer process requests;

means for calculating a required process time necessary for executing all data transfer processes

15   corresponding to the data transfer process requests in a time-sharing process manner, when at least one data transfer process has a time constraint; and

means for executing in the time-sharing process manner all data transfer processes except for

20   data transfer processes that should be excluded from those data transfer processes to be executed for the purpose of satisfying the time constraint, when the calculated required process time exceeds the time constraint for the relevant at least one data transfer

25   process.

23. The data processing device as claimed in claim 22, wherein:

said means for executing in the time-sharing process manner all data transfer processes except for data transfer processes that should be excluded from those data transfer processes to be executed for the purpose of satisfying the time constraint selects the data transfer processes to be excluded from those data transfer processes to be executed for the purpose of satisfying the time constraint based on predetermined priority information provided to respective data transfer processes.

24. The data processing device as claimed in claim 23, wherein:

the data transfer processes that should be excluded comprise those data transfer processes having a lower priority in said predetermined priority information.